

## 1. Lab Selection

- We are requested that the lab be certified in both alpha and gamma spec analysis if possible
- The lab should be capable of pulverizing and homogenizing slag/rock samples

## 2. Radionuclide List

- Gamma Spectrometry, sample as is, in the same jar as arrived (i.e. qualitative analysis with HPGe):
  - Ra-226 using 186keV peak for samples;
  - From the Uranium Decay Chain: Th-234, Pa-234 or Pa-234m, Pb-214, Bi-214
  - From the Thorium Decay Chain: Ra-228 and/or Ac-228, Ra-224, Pb-212, Bi-212, Tl-208
  - Other gamma emitting radionuclides: Cs-137 and K-40
- Gamma Spectrometry, homogenized with 21 day ingrowth (i.e. quantitative analysis with HPGe):
  - Ra-226 using Bi-214 and/or Pb-214 (if only one radionuclide is used, either Bi-214 or Pb-214, provide the other radionuclide's activity)
  - From the Uranium Decay Chain: Th-234, Pa-234 or Pa-234m
  - From the Thorium Decay Chain: Ra-228 and/or Ac-228, Ra-224, Pb-212, Bi-212, Tl-208
  - Other gamma emitting radionuclides: Cs-137 and K-40
- Alpha Spectrometry:
  - Isotopic Uranium: U-233/234, U-235/236, U-238
  - Isotopic Thorium: Th-230, Th-232, Th-228

## 3. Chain of Custodies

- The written sample prep and procedures given to the lab must be referenced in the Chain of Custody
- The matrix should be described as soil/rock/slag.

## 4. Sample Preparation Procedures

- EPA will send one sample one-16 ounce Jar of sample sent to lab from NFB & HTC Sites.
- We are requesting that they run **our jar** for an “as is” gamma spec initially prior to any sample preparation.
- The entire contents of that container will then be pulverized and homogenized.
  - **No rocks should be removed.** We do not want the material going through a sieve. Removing the rock/slag

will cause the sample to not be representative of what is actually at the site. If the material is pulverized and homogenized, that should be sufficient.

- From that jar, appropriate sample amount be transfer to another container for 21 day ingrowth and then gamma spec.
- Then the alpha spec aliquot will be taken from this pulverized jar content for analysis.

## **5. Products**

- Request that the laboratory send the “as is” gamma spec results to Weston once the initial analysis is complete.
  - To clarify, these results should be sent to us right away and not wait for the 21 day ingrowth.
- Alpha Spec and 21 day ingrowth gamma results report can be submitted at the same time.